

CURRICULUM VITAE



***Assoc Prof Ir Ts Dr* SHAHRIL IRWAN BIN SULAIMAN**

Faculty of Electrical Engineering
Universiti Teknologi MARA
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POSITION : Associate Professor

ACADEMIC QUALIFICATION:

Degree	Area	Institution	Year Awarded
PhD	Electrical Engineering	Universiti Teknologi MARA (UiTM), Shah Alam, Malaysia	2012
MEngSc	Photovoltaic Engineering	University of New South Wales (UNSW), Sydney, Australia	2004
BEng (Hons)	Electrical & Electronics	Universiti Tenaga Nasional (UNITEN), Putrajaya, Malaysia	2002
Certificate (with Distinction)	English as a Second Language	American Degree Programme (ADP), Pusat Pendidikan Persediaan (PPP – ITM), Malaysia	1998

PROFESSIONAL QUALIFICATION / MEMBERSHIP / AFFILIATION:

- Professional Engineer – Board of Engineers (BEM), Malaysia
- Professional Technologist – Malaysia Board of Technologists (MBOT)
- Senior Member – The Institute of Electrical and Electronics Engineers (IEEE).
- Graduate Engineer – Board of Engineers (BEM), Malaysia
- Certificate Holder: Institute of Sustainable Power Quality (ISPQ) on Design & Installation of Grid-Connected Photovoltaic Systems
- Head – Green Energy Research Centre (GERC), Universiti Teknologi MARA, Malaysia

WORK EXPERIENCE:

Year	Organization	Position	Role / Experience / Task
Jan 2004 – Nov 2004	Faculty of Electrical Engineering, Universiti Teknologi MARA, Shah Alam, Malaysia	Lecturer	- delivered lectures in several electronics and power engineering courses
Nov 2004 – Dec 2007	Universiti Teknologi MARA, Kampus Samarahan, Sarawak, Malaysia	Lecturer	- appointed as Head of Programme for Diploma in Electronics Engineering - delivered lectures in several electronics and power engineering courses
Dec 2007 – Jun 2009	Faculty of Electrical Engineering, Universiti Teknologi MARA, Shah Alam, Malaysia	Lecturer	- delivered lectures in several electronic engineering courses
Jun 2009 – Dec 2018	Faculty of Electrical Engineering, Universiti Teknologi MARA, Shah Alam, Malaysia	Senior Lecturer	- delivered lectures in several electronic engineering courses - course coordinator for photovoltaic systems
Dec 2018 – present	School of Electrical Engineering, College of Engineering, Universiti Teknologi MARA, Shah Alam, Malaysia	Associate Professor	- course coordinator for photovoltaic systems - supervising postgraduate students
Jan 2009 – Jan 2011	Photovoltaic Monitoring Centre (PVMC), Universiti Teknologi MARA, Malaysia	Head of Photovoltaic System Unit	- supervising research assistants and research officers - attending testing and commissioning - involved in Quality Assurance Scheme for selected grid-connected photovoltaic systems in Malaysia - preparing performance report for Malaysia Energy Centre (PTM) - conducting training and various consultancy services for PV industry
Aug 2011 – present	Green Energy Research Centre (GERC), Universiti Teknologi MARA, Malaysia	Head	- supervising research assistants and research officers as project leader - assisting various government agencies and industry in implementation of photovoltaic systems - monitoring of selected stand-alone photovoltaic systems in Malaysia - appointed as invited speakers in various workshops, seminar and conference.

POSTGRADUATE SUPERVISION:

Level	Graduated		On-Going	
	Main Supervisor	Co-supervisor	Main Supervisor	Co-supervisor
PhD	4	2	4	1
Master	5	1	0	2
Total	9	3	4	3

RESEARCH GRANTS:**List of Research Grants:**

No.	Source of Grant	Name of Researchers	Project Title	Duration
1	Petronas Research Sdn Bhd	S.A.M. Al-Junid, Z. Mohamed, M.F. Md Idros, A.H. Abdul Razak, S.I. Sulaiman, Z. Othman	Self-Sustaining Energy Storage System for Wellhead, Satellite, and Remote Oil Rig Platform Application	1 Jun 2024 – 31 May 2026 (2 years)
1	Fundamental Research Grant Scheme (600-RMC/FRGS 5/3 (096/2022))	A.H.M. Nordin, S.I. Sulaiman, R.F. Mustapa, Z. Othman	A Study on Impact of PV Modules End-of-Life and Policy Planning for Malaysia with Integration of Life Cycle Approach	1 Sep 2022 – 31 Aug 2024 (2 years)
2	Strategic Research Partnership (100-RMC 5/3/SRP (034/2021))	H. Zainuddin, M.Z. Hussin, S.I. Sulaiman, N.A. Rahman, K.A. Sekak, E.A. Setiawan, A. Ferdiansyah	Comparative Performance Assessment of Grid-Connected Photovoltaic System in Tropical Region: Case Studies in Malaysia and Indonesia	15 Jul 2021 – 14 Jul 2023 (2 years)
3	Special Research Grant (600-RMC/GPK 5/3 (169/2020))	P.N.A.M. Yunus, S.I. Sulaiman, Z. Othman, D. Johari and N. Muhammad	An Immune-Based Sizing in Stand-Alone Photovoltaic System Design Optimization	21 Dec 2020 – 18 Jun 2023 (3 years)
4	Special Research Grant (600-	Z. Othman, S.I. Sulaiman, I. Musirin	Bio-Acoustic Squirrel Search as Improved Optimization Model with Ultrasonic Vocalization of Glaucomys Volans	21 Dec 2020 – 18 Jun 2023 (3 years)

No.	Source of Grant	Name of Researchers	Project Title	Duration
	RMC/GPK 5/3 (171/2020)			
5	Fundamental Research Grant Scheme (600-IRMI/FRGS 5/3(221/2019))	S.I. Sulaiman, A.H.M. Nordin, Z. Othman, S. Shaari and R.F. Mustapa	A Novel Hybrid Life-Cycle Inventory Approach in Life-Cycle Assessment of Large Scale Solar Photovoltaic System	1 Sep 2019 – 30 May 2022 (2 years)
6	Fundamental Research Grant Scheme (600-IRMI/FRGS 5/3 (446/2019))	H. Zainuddin, S.I. Sulaiman, S. Shaari, M.Z. Hussin and F.L.M. Khir	The Migration Effect of Nominal Operating Cell Temperature Test Method to Nominal Module Operating Temperature Test Method on the Electrical and Thermal Characteristics of PV Module	1 Sep 2019 – 31 May 2022 (2.5 years)
7	Fundamental Research Grant Scheme (600-IRMI/FRGS 5/3 (194/2019))	N.H.A. Rahman, N.Z.I. Zakaria, N.I. Ilham, E.H. Mat Saat, Y. Yusof, S.I. Sulaiman	Optimization on the Stand-Alone Photovoltaic Sizing with Hydrogen Energy Storage Considering Computational Algorithm	1 Jan 2019 – 31 Dec 2021 (2 years)
8	Internal Grant (Ref: 600-IRMI/DANA 5/3/KK (008/2017))	S.I. Sulaiman, A.M. Omar, M.F. Hussin, A.F. Abidin and H. Abu Hassan	Energy Distribution for Research Facilities in Kuala Keniam UiTM-Perhilitan Research Station – Power Supply	1 Jul 2017 – 31 Mar 2018 (9 months)
9	Internal Grant (Ref: 600-IRMI/DANA 5/3/KK (008/2017))	S.I. Sulaiman, A.M. Omar, F. Husin, H. Abu Hassan and A.F. Abidin	Optimising Creativity and Internal Expertise to Design and Execute Repair of Kuala Keniam UiTM-Perhilitan Research Station – Electrical Power Supply & Safety	1 Jul 2017 – 1 May 2019 (2 years)
10	Industrial Grant 100-IRMI/PRI 16/6/2 (0011/2016)	N.Z.I. Zakaria, S. Shaari, A.M. Omar, S.I. Sulaiman, S. Ahmed, L. Rimon	Sungai Ara Roof Insulation Programme	20 Oct 2016 – 31 Aug 2017 (10 months)
11	Fundamental Research Grant Scheme (FRGS)	I. Musirin, S.I. Sulaiman	Chaotic Evolutionary Artificial Immune Algorithm Based Technique in Multi-Area Voltage Stability Model with Renewable Energy Consideration	1 Aug 2016 – 31 Jul 2019 (3 years)

No.	Source of Grant	Name of Researchers	Project Title	Duration
	(Ref: 600-IRMI/FRGS 5/3 (102/2016))	and Z. Hamid		
12	Fundamental Research Grant Scheme (FRGS) (Ref: 600-RMI/FRGS 5/3 (120/2015))	S.I. Sulaiman and I. Musirin	Biomimetic Dolphin Search Algorithm Considering Ecogeography Feature of Tursiops Truncatus	2 Nov 2015 – 1 May 2018 (2.5 years)
13	Fundamental Research Grant Scheme (FRGS) (Ref: 600-RMI/FRGS 5/3 (151/2014))	N.Z.I. Zakaria, S.I. Sulaiman, H. Zainuddin, S. Shaari	Temperature Differential Expression for Operating Cell Temperature of Crystalline Photovoltaic Modules in Varied Built Environment	1 Dec 2014 – 30 Nov 2016 (2 years)
14	Research Acculturation Grant Scheme (RAGS) (Ref: 600-RMI/RAGS 5/3 (6/2014))	N. Othman, S.I. Sulaiman, A.H.M. Nordin	Enhanced Cuckoo Search with Biogeographic Behaviour of Cuculiformes	1 Dec 2014 – 31 May 2017 (2.5 years)
15	Fundamental Research Grant Scheme (600-RMI/FRGS 5/3 (95/2014))	H. Zainuddin, S.I. Sulaiman, S. Shaari	Anatomy of Photovoltaic Temperature Model	1 Jul 2014 – 31 Dec 2016 (2.5 years)
16	Research Acculturation Grant Scheme (RAGS) (Ref: 600-RMI/RAGS 5/3 (212/2013))	Z. Othman, S.I. Sulaiman, N. Kamaruddin	Firefly-Based Lampyridae Technique Considering Enhanced Adaptive Aviation Algorithm	15 Sep 2013 – 15 Mar 2016 (2.5 years)
17	Excellence Fund CF (Ref: 600-RMI/DANA 5/3/CG (9/2012))	S.I. Sulaiman, S. Shaari, I. Musirin, A.M. Omar, D.N.M.A. Abdullah and H. Zainuddin	Improved Firefly Algorithm Using Adaptive Light Absorption Coefficient	1 Oct 2012 – 30 Sep 2014 (2 years)
18	Fundamental Research Grant Scheme (FRGS) (Ref: 600-RMI/ST/FRGS	S.I. Sulaiman, I. Musirin, S. Shaari, A.M. Omar	Evolutionary Programming for Sizing Optimization in Stand-Alone Photovoltaic System	15 Apr 2012 – 14 Oct 2014 (2.5 years)

No.	Source of Grant	Name of Researchers	Project Title	Duration
	5/3/Fst (34/2012))			
19	Excellence Fund RIF (Ref: 600-RMI/ST/DANA 5/3/RIF (290/2012))	Z. Othman, S.I. Sulaiman, D.N.M. Abdullah	Improved Fast Evolutionary Programming in Techno-Economic Optimization of Grid-Connected Photovoltaic System	01 Aug 2012 – 31 Jul 2014 (2 years)
20	Akaun Amanah Industri Bekalan Elektrik (AAIBE) (Ref: 100-RMI/GOV 16/6/2 (21/2011))	S.I. Sulaiman, A.M. Omar, S. Shaari, Z. Othman, D. Johari, N. Kamaruddin	Monitoring of the AAIBE-funded Stand-Alone Photovoltaic Power Systems	1 Aug 2011 – 19 Jun 2014 (3 years)
21	Malaysian Building Integrated Photovoltaic (MBIPV)-Pusat Tenaga Malaysia	S. Shaari, A.M. Omar, S.I. Sulaiman, H. Zainuddin, Z.M. Zain, K.S. Muhammad	Monitoring of Grid-Connected Photovoltaic Systems Under Malaysia Building Integrated Photovoltaic (MBIPV) Project	27 Apr 2007 – 30 Sep 2011 (4 years)
22	Fundamental Research Grant Scheme (FRGS) (Ref: 600-RMI/ST/FRGS 5/3/Fst (81/2010))	I. Musirin, S.I. Sulaiman, S. Shaari, A.M. Omar, T.K.A. Rahman, M.M. Othman and K.S. Muhammad	Computational Performance of Artificial Immune System-based Sizing Technique for Grid-Connected Photovoltaic System	1 Mar 2010 – 1 Nov 2012 (2.5 years)
23	Dana Kecemerlangan (Ref: 600-RMI/ST/DANA 5/3/Dst (283/2009))	S.I. Sulaiman, S. Shaari, T.K.A. Rahman, I. Musirin	Development of Novel Sizing technique for Grid-Connected Photovoltaic System	1 Jan 2010 – 19 Feb 2013 (3 years)

SELECTED PUBLICATIONS:

A. Books for photovoltaic industry

- [1] S. Shaari, A.M. Omar, S.I. Sulaiman and A.H. Haris, *Photovoltaic Energy Systems – Design Principles*. Bangi, Malaysia: Malaysian Green Technology Corporation (MGTC), 2013. {ISBN: 978-967-5895-09-8}
- [2] S. Shaari, A.M. Omar, A.H. Haris and S.I. Sulaiman, *Solar Photovoltaic Power: Fundamentals*. Putrajaya, Malaysia: MBIPV, Ministry of Energy, Green Technology & Water, Malaysia, 2010. {ISBN: 978-983-43893-8-3}
- [3] S. Shaari, A.M. Omar, A.H. Haris, R.A. Rahman and S.I. Sulaiman, *Solar Photovoltaic Power: Irradiation Data for Malaysia*. Putrajaya, Malaysia: MBIPV, Ministry of Energy, Green Technology & Water, Malaysia, 2010. {ISBN: 978-983-43893-9-0}
- [4] S. Shaari, A.M. Omar, A.H. Haris and S.I. Sulaiman, *Solar Photovoltaic Power: Designing Grid-Connected Systems*. Putrajaya, Malaysia: MBIPV, Ministry of Energy, Green Technology & Water, Malaysia, 2010. {ISBN: 978-983-43893-6-9}
- [5] S. Shaari, A.M. Omar, A.H. Haris and S.I. Sulaiman, *Solar Photovoltaic Power: Designing Stand-Alone Systems*. Putrajaya, Malaysia: MBIPV, Ministry of Energy, Green Technology & Water, Malaysia, 2010. {ISBN: 978-983-43893-7-6}
- [6] S. Shaari, A.M. Omar, A.H. Haris, S.I. Sulaiman and K.S. Muhammad, *Solar Photovoltaic Power: Hands-On Practicals*. Putrajaya, Malaysia: MBIPV, Ministry of Energy, Green Technology & Water, Malaysia, 2010. {ISBN: 978-967-5893-00-1}
- [7] S. Shaari, A.M. Omar, A.H. Haris and S.I. Sulaiman, *Solar Photovoltaic Power: Testing, Commissioning and Acceptance Test of Grid-Connected Systems*. Putrajaya, Malaysia: MBIPV, Ministry of Energy, Green Technology & Water, Malaysia, 2010. {ISBN: 978-967-5893-01-8}
- [8] S. Shaari, A.M. Omar, A.H. Haris and S.I. Sulaiman, *Solar Photovoltaic Power: Testing, Commissioning and Acceptance Test of Stand-Alone Systems*. Putrajaya, Malaysia: MBIPV, Ministry of Energy, Green Technology & Water, Malaysia, 2010. {ISBN: 978-967-5893-02-5}

B. Journals

- [1] Y. Yatim, M.F.N. Tajuddin, S.I. Sulaiman, A. Azmi, S.M. Ayob and T. Sutikno “Optimizing battery energy storage sizing in microgrids using manta ray foraging optimization algorithm,” *International Journal of Power Electronics and Drive Systems*, vol. 15, no. 4, pp. 2535-2544, December 2024. {SCOPUS} Q3
- [2] A.H. Mohd Nordin, S.I. Sulaiman and R.F. Mustapa “Decarbonization pathways: assessing life cycle GHG emissions in Malaysia's electricity generation,” *Engineering, Technology and Applied Science Research*, vol. 14, no. 5, pp. 16977-16983, 2024. {SCOPUS} Q2
- [3] N.H.A. Rahman, S.I. Sulaiman, M.Z. Hussin, E.H.M. Saat and N.D.K. Ashar “State-of-the-art probabilistic solar power forecasting: a structured review,” *Pertanika Journal of Science and Technology*, vol. 32, no. 6, pp. 2459-2488, October 2024. {SCOPUS} Q3

- [4] A.H. Mohd Nordin, S.I. Sulaiman, S. Shaari and R.F. Mustapa “Towards end-of-life of photovoltaic systems in Malaysia: An assessment of management strategies using a life cycle approach,” *Sustainable Production and Consumption*, vol. 50, pp. 587-609, October 2024. {SCOPUS & WoS, IF 2024: 10.9} Q1
- [5] N.S.S. Mohamed, S.I. Sulaiman, S.R. Abdul Rahim and A. Azmi “Optimal sizing of a fixed-tilt ground-mounted grid-connected photovoltaic system with bifacial modules using Harris Hawks Optimization,” *Energy Conversion and Management*, vol. 314, pp. 118738, August 2024. {SCOPUS & WoS, IF 2024: 9.9} Q1
- [6] Y.I.A.A. Rahim, H. Zainuddin, E.A. Setiawan, A.F. Madsuha, M.Z. Hussin, S.I. Sulaiman and S.N.N. Ibrahim “Performance of grid-connected photovoltaic systems in Northern and Southern Hemispheres under equatorial climate,” *International Journal of Power Electronics and Drive Systems*, vol. 5, no. 2, pp. 858–873, 2024. {SCOPUS} Q3
- [7] N.H.A. Rahman, M.Z. Hussin, S.I. Sulaiman, M.A. Hairuddin and E.H.M. Saat “Univariate and multivariate short-term solar power forecasting of 25MWac Pasir Gudang utility-scale photovoltaic system using LSTM approach,” *Energy Reports*, vol. 9, pp. 387–393, October 2023. {SCOPUS & WoS, IF 2024: 4.7} Q1
- [8] A.H.M. Nordin, S.I. Sulaiman, S. Shaari and R.F. Mustapa, “Energy and environmental impacts of a 37.57 MW dc ground-mounted large-scale photovoltaic system in Malaysia: A life-cycle approach,” *Journal of Cleaner Production*, vol. 335, pp. 130326, February 2022. {SCOPUS & WoS, IF 2024: 9.7} Q1
- [9] I. Ebi, Z. Othman and S.I. Sulaiman, “Optimal design of grid-connected photovoltaic system using grey wolf optimization,” *Energy Reports*, vol. 8, pp. 1125–1132, November 2022. {SCOPUS & WoS, IF 2024: 4.7} Q1
- [10] S.I. Sulaiman, H.A. Majid and Z. Othman, “Loss of load probability minimization for stand-alone photovoltaic system using elephant herding optimization,” *Energy Reports*, vol. 8, pp. 1038–1044, November 2022. {SCOPUS & WoS, IF 2024: 4.7} Q1
- [11] A.H.M. Nordin, S.I. Sulaiman and S. Shaari, “Life cycle impact of photovoltaic module degradation on energy and environmental metrics,” *Energy Reports*, vol. 8, pp. 923–931, November 2022. {SCOPUS & WoS, IF 2024: 4.7} Q1
- [12] N.A. Kamarzaman, S.I. Sulaiman, A.I.M. Yassin, I.R. Ibrahim and H. Zainuddin, “A honey badger algorithm for optimal sizing of an AC coupled hybrid stand-alone photovoltaic system,” *Energy Reports*, vol. 8, pp. 511–520, November 2022. {SCOPUS & WoS, IF 2024: 4.7} Q1
- [13] Z. Othman, S.I. Sulaiman, I. Musirin, A.M. Omar and S. Shaari, “Handling multiple models of system components in stand-alone photovoltaic system sizing via iterative sizing algorithm,” *Energy Reports*, vol. 8, pp. 674–680, November 2022. {SCOPUS & WoS, IF 2024: 4.7} Q1
- [14] N.A. Kamarzaman, S.I. Sulaiman, A.I.M. Yassin, H. Zainuddin and I.R. Ibrahim, “A modified honey badger algorithm for optimal sizing of an AC coupled stand-alone photovoltaic–battery system,” *Energy Reports*, vol. 8, pp. 902–909, November 2022. {SCOPUS & WoS, IF 2024: 4.7} Q1
- [15] E. Hanta, S.I. Sulaiman and Z. Othman, “Cat swarm optimization for sizing photovoltaic-battery based stand-alone system,” *Journal of Physics: Conference Series*, vol. 2258, pp: 012017, 2022. {SCOPUS}

- [16] S.I. Sulaiman, T.K.A. Rahman, I. Musirin, S. Shaari and K. Sopian, "An intelligent method for sizing optimization in grid-connected photovoltaic system," *Solar Energy*, vol. 86, no. 7, pp. 2067-2082, July 2012. {SCOPUS & WoS, IF 2021: 7.188} Q1
- [17] N.I. Abdul Aziz, S.I. Sulaiman, S. Shaari, I. Musirin and K. Sopian, "Optimal sizing of stand-alone photovoltaic system by minimizing the loss of power supply probability," *Solar Energy*, vol. 150, no. 1, pp. 220-228, July 2017. {SCOPUS & WoS, IF 2021: 7.188} Q1
- [18] N.S.S. Mohamed, S.I. Sulaiman and Rahim, S.R.A, "Design of ground-mounted grid-connected photovoltaic system with bifacial modules using PVsyst software," *Journal of Physics: Conference Series*, vol. 2312(1), pp: 012058, 2022. {SCOPUS}
- [19] S. I. Sulaiman, T. K. A. Rahman and I. Musirin, "Multi-objective evolutionary programming for optimal grid-connected photovoltaic system design," *International Review of Electrical Engineering*, vol. 5, no. 6, pp. 2936-2944, November-December 2010. {SCOPUS & WoS} Q3
- [20] S. I. Sulaiman, T. K. A. Rahman and I. Musirin, "Novel intelligent sizing algorithm for grid-connected photovoltaic system design," *International Review on Modelling and Simulations*, vol. 3, no. 4, pp. 639-652, August 2010. {SCOPUS} Q3
- [21] H. Zainuddin, S. Shaari, A.M. Omar, S.I. Sulaiman, Z. Mahmud and F. Muhamad Darus, "Prediction of module operating temperatures for free-standing (FS) photovoltaic (PV) system in Malaysia," *International Review on Modelling and Simulations*, vol. 4, no. 6, pp. 3388-3394, December 2011. {SCOPUS} Q3
- [22] H. Zainuddin, S. Shaari, A.M. Omar and S.I. Sulaiman, "Operating temperature correlation with ambient factors of building integrated photovoltaic (BIPV) grid-connected (GC) system in Malaysia," *International Review on Modelling and Simulations*, vol. 4, no. 4, pp. 1992-1998, August 2011. {SCOPUS} Q3
- [23] A.H. Mohd Nordin, S.I. Sulaiman, S. Shaari and R.F. Mustapa, "Life-cycle assessment of residential-scale grid-connected photovoltaic system in Malaysia based on monocrystalline silicon modules," *International Journal of Power Electronics and Drive Systems*, vol. 11, no. 2, pp. 677-684, 2020. {SCOPUS} Q3
- [24] A. Farooqi, M. Othman, A.F. Abidin, S.I. Sulaiman, M.A.M. Radzi, "Mitigation of power quality problems using series active filter in a microgrid system," *International Journal of Power Electronics and Drive Systems*, vol. 10, no. 4, pp. 2245-2253, December 2019. {SCOPUS} Q2

PROFESSIONAL SERVICES:

List of selected services:

- [1] Master Trainer, competency-based courses on Design of Grid-Connected Photovoltaic Systems.
- [2] Master Trainer, competency-based courses on Design of Stand-Alone Photovoltaic Systems.
- [3] Expert Witness for Testing & Commissioning of Grid-Connected Photovoltaic Systems under Feed-in Tariff Scheme, Sustainable Energy Development Authority (SEDA) Malaysia.
- [4] Project Management Consultant for National Photovoltaic Monitoring Centre and Performance Database System, Sustainable Energy Development Authority (SEDA) Malaysia.
- [5] Trainer, ISPQ-accredited courses on Design and Installation of Grid-Connected Photovoltaic Systems, Malaysia Building Integrated Photovoltaic (MBIPV) Project, Ministry of Energy, Green Technology and Water (KeTTHA), Malaysia.
- [6] Trainer, ISPQ-accredited courses on Design and Installation of Stand-Alone Photovoltaic Systems, Malaysia Building Integrated Photovoltaic (MBIPV) Project, Ministry of Energy, Green Technology and Water (KeTTHA), Malaysia.
- [7] Consultant, A study on solar hybrid systems for rural electrification programmes in Malaysia, PSE AG, Germany.
- [8] Trainer, ISPQ-accredited courses on Design and Installation of Grid-Connected Photovoltaic Systems, Sustainable Energy Development Authority (SEDA) Malaysia.
- [9] Trainer, ISPQ-accredited course on Design and Installation of Stand-Alone Photovoltaic Systems, Sustainable Energy Development Authority (SEDA) Malaysia.
- [10] Trainer, Train-the-trainer courses on Grid-Connected Photovoltaic System Installation, Operation and Maintenance for Wireman and Chargeman, Sustainable Energy Development Authority (SEDA) Malaysia.
- [11] Content developer, Preparation of Teaching Materials for Grid-Connected Photovoltaic System Installation and Maintenance Course, Sustainable Energy Development Authority (SEDA) Malaysia.
- [12] Trainer, Train-the-trainer courses on Grid-Connected Photovoltaic System Installation, Operation and Maintenance for Wireman and Chargeman and Train-the-trainer courses on Grid-Connected Photovoltaic System Installation and Maintenance- Phase 3, Sustainable Energy Development Authority (SEDA) Malaysia.
- [13] Content developer, Design and Installation of Grid-Connected Photovoltaic Systems - Phase 1, Sustainable Energy Development Authority (SEDA) Malaysia.
- [14] Trainer, ASEAN ACE-Giz Course on Solar Photovoltaic Management, Sustainable Energy Development Authority (SEDA) Malaysia.
- [15] Content developer, Preparation of Solar Photovoltaic Installation Procedure, Sustainable Energy Development Authority (SEDA) Malaysia.

- [16] Content developer, Preparation of Teaching Materials for Off-Grid Photovoltaic Systems Design Course, Sustainable Energy Development Authority (SEDA) Malaysia.
- [17] Trainer, Stand-Alone Photovoltaic Systems Training, Pusat Latihan Proaktif, Kuching, Sarawak.
- [18] Consultant, Solar Irradiation Data for Malaysia, Sustainable Energy Development Authority (SEDA) Malaysia.
- [19] Trainer, Hands On Training for Grid Connected Photovoltaic System and Short Course on Guide for Testing and Commissioning from Small to large Scale Grid-Connected Photovoltaic System, Malaysia Photovoltaic Industry Association (MPIA).
- [20] Consultant, Rural Electrification using Hybrid System (Wind/Solar/Genset), Ministry of Rural Development and Authority (KKLW), Malaysia.

EXPERT CONTRIBUTIONS / APPOINTMENT:

- [1] 2023-present– Expert Panel for Solar Photovoltaic, Malaysia Rubber Council (MRC) – Fund for Automation and Technology (FAGT)- Solar Energy.
- [2] 2020–present– Represents Malaysia as International Committee in IEC- TC 82/WG 1.
- [3] Jan 2013 – present: currently Chairman, Working Group on Solar Photovoltaic Systems under Department of Standards Malaysia for the development of Malaysian Standards related to photovoltaic systems.
- [4] Since 2019 – Evaluation Panel for academic programmes accredited by Malaysia Board of Technologists (MBOT).
- [5] 2014 – 2015: Expert committee and advisor, Development of curriculum for academic programme on photovoltaic systems, Department of Community College Studies, Ministry of Education.
- [6] Feb 2013- Committee, Development of training modules for design and installation of grid-connected photovoltaic systems, Sustainable Energy Development Authority (SEDA) Malaysia.
- [7] Jan 2012- Committee, Development of training modules for photovoltaic system installation, Sustainable Energy Development Authority (SEDA) Malaysia.

SELECTED INVITED SPEAKERS:

- [1] Invited Speaker, Course on Introduction to Grid-Connected Photovoltaic System Operation & Maintenance, 29-30 April 2024.
- [2] Invited Speaker, Course on Introduction to Grid-Connected Photovoltaic System Operation & Maintenance, 2-3 September 2024.
- [3] Invited Speaker, Course on Introduction to Grid-Connected Photovoltaic System Operation & Maintenance, 05-06 September 2023.
- [4] Invited Speaker, Overview of Grid-Connected Photovoltaic Systems, 12 May 2023, organized by Facilities Management Office, UiTM Selangor.
- [5] Invited Speaker, Course on Introduction to Grid-Connected Photovoltaic System Operation & Maintenance, 24-25 May 2023.
- [6] Invited Speaker, Course on Introduction to Grid-Connected Photovoltaic System Operation & Maintenance, 9-10 November 2022.
- [7] Invited Speaker, Malaysian Standards on Solar Photovoltaic Systems, 24 June 2020, Webinar, organized by SIRIM STS.
- [8] Invited Speaker, Seminar on Solar Photovoltaic Systems, 26 Feb 2020, at Concorde Hotel, Shah Alam, organized by SIRIM STS.
- [9] Invited Speaker, Seminar on Recommendations for Small Renewable Energy and Hybrid Systems for Rural Electrification, 18 Sep 2019, at Concorde Hotel, Shah Alam, organized by SIRIM STS.
- [10] Invited Speaker, 1st International Conference on Green Technology and Sustainable Development, 23 Oct 2019, Shah Alam, organized by UiTM
- [11] Invited Speaker, Seminar on Grid-Connected Solar Photovoltaic Systems, 11 Jul 2019, at The Light Hotel, Pulau Pinang, organized by SIRIM STS.
- [12] Keynote speaker, International Conference on Electrical Engineering and Computing (ICEEComp 2019), 20 Apr 2019, at HiG Hotel, Langkawi, organized by Computational Intelligent Resources.
- [13] Invited Speaker, Seminar on Grid-Connected Solar Photovoltaic Systems, 5 Mar 2019, at Concorde Hotel, Shah Alam, organized by SIRIM STS.
- [14] Invited Speaker, Renewable Energy Summer Programme, 27 Feb 2019, at Green Energy Research Centre, UiTM Shah Alam, organized by Office of International Affair - UiTM.
- [15] Invited Speaker, Short Course on Grid-Connected Solar Photovoltaic Systems, 7-8 Nov 2018, at Universiti Teknologi MARA, organized by Office of Infrastructure and Info-structure Development (PPII), UiTM.
- [16] Expert Speaker, Intensive Course on Photovoltaic Power Systems, 5-6 Sep 2018, at Advanced Technology Training Centre (ADTEC) Shah Alam, organized by Institut Latihan Perindustrian (ILP) Kuala Lumpur.

- [17] Invited Speaker, Workshop on Malaysian Standards for Grid-Connected Solar Photovoltaic Systems, 4 Sep 2018, at Bayview Hotel, Georgetown, Pulau Pinang, organized by Department of Standards Malaysia.
- [18] Invited Speaker, Workshop on Malaysian Standards for Grid-Connected Solar Photovoltaic Systems, 18 Apr 2018, at Concorde Hotel, Shah Alam, organized by Department of Standards Malaysia.
- [19] Invited Speaker, Workshop on Malaysian Standards for Grid-Connected Solar Photovoltaic Systems, 7 Sep 2017, at Concorde Hotel, Shah Alam, organized by Department of Standards Malaysia.
- [20] Invited Speaker, Workshop on Malaysian Standards for Grid-Connected Solar Photovoltaic Systems, 3 May 2017, at The Light Hotel, Pulau Pinang, organized by Department of Standards Malaysia.
- [21] Invited Speaker, Training on Design and Installation of Large-Scale Solar Power Plant, 17 Nov 2016, at Suruhanjaya Tenaga, Putrajaya, organized by Suruhanjaya Tenaga Malaysia.
- [22] Invited Speaker, Workshop on Testing and Commissioning of Grid-Connected Photovoltaic Systems for GCPV Systems Design Qualified Person (QP), 2 Jun 2016, at SEDA Malaysia, organized by Sustainable Energy Development Authority (SEDA) Malaysia.
- [23] Invited Speaker, Workshop on Malaysian Standards: Recommendations for Small Renewable Energy and Hybrid Systems for Rural Electrification- Phase 2, 17 Mar 2016, at Riverside Majestic Hotel, Kuching, Sarawak, organized by Department of Standards Malaysia.
- [24] Invited Speaker, Workshop on Malaysian Standards: Recommendations for Small Renewable Energy and Hybrid Systems for Rural Electrification- Phase 1, 19 Oct 2015, at Concorde Hotel, Shah Alam, organized by Department of Standards Malaysia.
- [25] Keynote Presenter, International Conference on Electronic Devices, Systems and Applications (ICEDSA), 14 Sep 2015, at Istana Hotel, Kuala Lumpur, organized by Universiti Teknologi MARA (UiTM) and the American University of Ras Al Khaimah, (AURAK), United Arab Emirates.
- [26] Invited Speaker, Workshop on Malaysian Standards for Grid-Connected Solar Photovoltaic Systems, 25 May 2015, at The Pacific Sutera Hotel, Kota Kinabalu, organized by Department of Standards Malaysia.
- [27] Invited Speaker, One Day Workshop on Testing and Commissioning of Grid-Connected Photovoltaic Systems for GCPV Systems Design Qualified Person (QP), 11 May 2015, at Palm Garden Hotel, Putrajaya, organized by Department of Standards Malaysia.
- [28] Invited Speaker, Workshop on Malaysian Standards for Grid-Connected Solar Photovoltaic Systems, 9 Dec 2014, at Shah Alam Convention Centre (SACC), Shah Alam, organized by Department of Standards Malaysia.

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